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Proposed Regulations for Commercial Ice-Makers

Scotsman

ICE O-Matic ®

Docket No. 04-AAER-1

Presentation to:
California Energy Commission
Public Hearing
October 13, 2004

Introduction

ICE-O-Matic - ***John Broadbent, VP Engineering***

- **A leading U.S. manufacturer of ice making equipment**
- **Denver, CO**
- **Subsidiary of Enodis**

Scotsman Ice Systems - ***Matt Allison, VP Engineering***

- **A leading U.S. manufacturer of ice making equipment**
- **Chicago, IL**
- **Subsidiary of Enodis**

Consultant – ***Rick Caron, CEO The Moseley Corporation***

- **Former Managing Director of Arthur D. Little, Inc.**
- **Arthur D. Little, Inc. provided initial report to DOE entitled *Energy Savings Potential for Commercial Refrigeration Equipment***

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- **The world's largest manufacturer of commercial foodservice equipment**
- **The world's largest manufacturer of ice machines**

Contents

Background

We are eager to collaborate with the Commission in developing a regulation to reduce overall energy used by commercial ice makers

We believe the framework for the legislation is sound and would like to discuss improvement opportunities in the following areas:

Insights on Categories:

Consideration for differing compliance requirements (Compact, Quiet and Water Cooled Machines)

Reduce the potential of adverse economic impact

Implementation Refinements:

Minor corrections and clarifications

Reduce the potential of adverse energy impact

Contents

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Insights on Machine Categories

Cube ice machines are manufactured in standard widths:

- **22”-wide units are used when space is limited**

  Capacity = 200 to 560 lbs/day

- **30” units are most popular**

  Capacity = 200 to 1000 lbs/day

- **48” units are used when high capacity is needed**

  Capacity = 1100 – 2300 lbs/day

Beverage application and small restaurants

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Category: Air Cooled Machines Sub category: 22 inch wide

Situation Analysis:

- 22” wide units fill an important need
  - **Command a value premium**
- 22” wide air-cooled units are inherently less efficient due to air-flow limitations
- Proposed regulations eliminates 11 out of 12 models, drastically limiting options for the consumer

Recommendation:

Exemption or differing compliance requirements

Possible Solution:

Provide a separate category for 22” wide units

There is precedent in the proposed regulations which provides a separate category for **self-contained** air-cooled units

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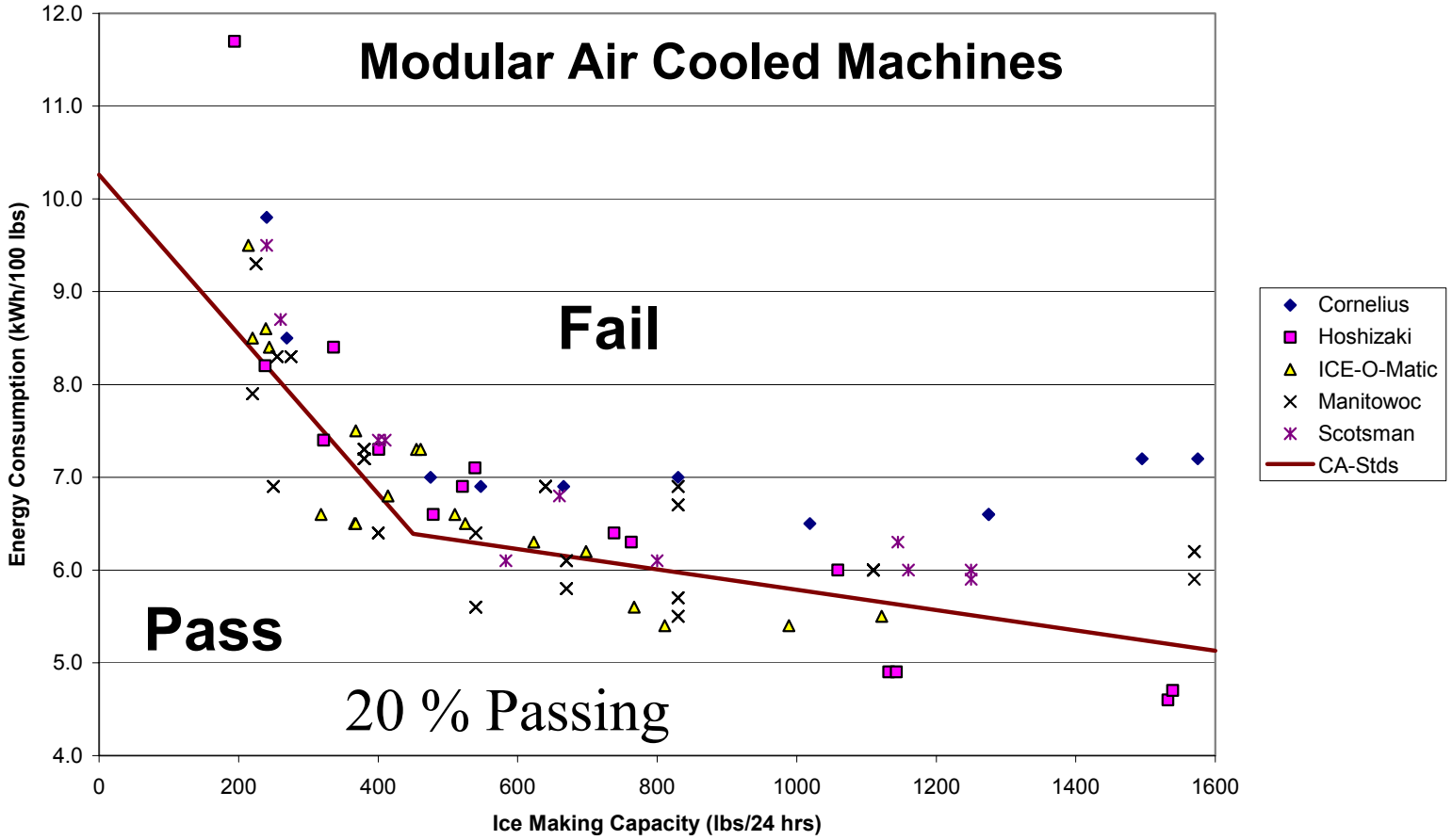
Category: Modular Air Cooled Machines

The proposed regulation does not consider width in setting efficiency levels



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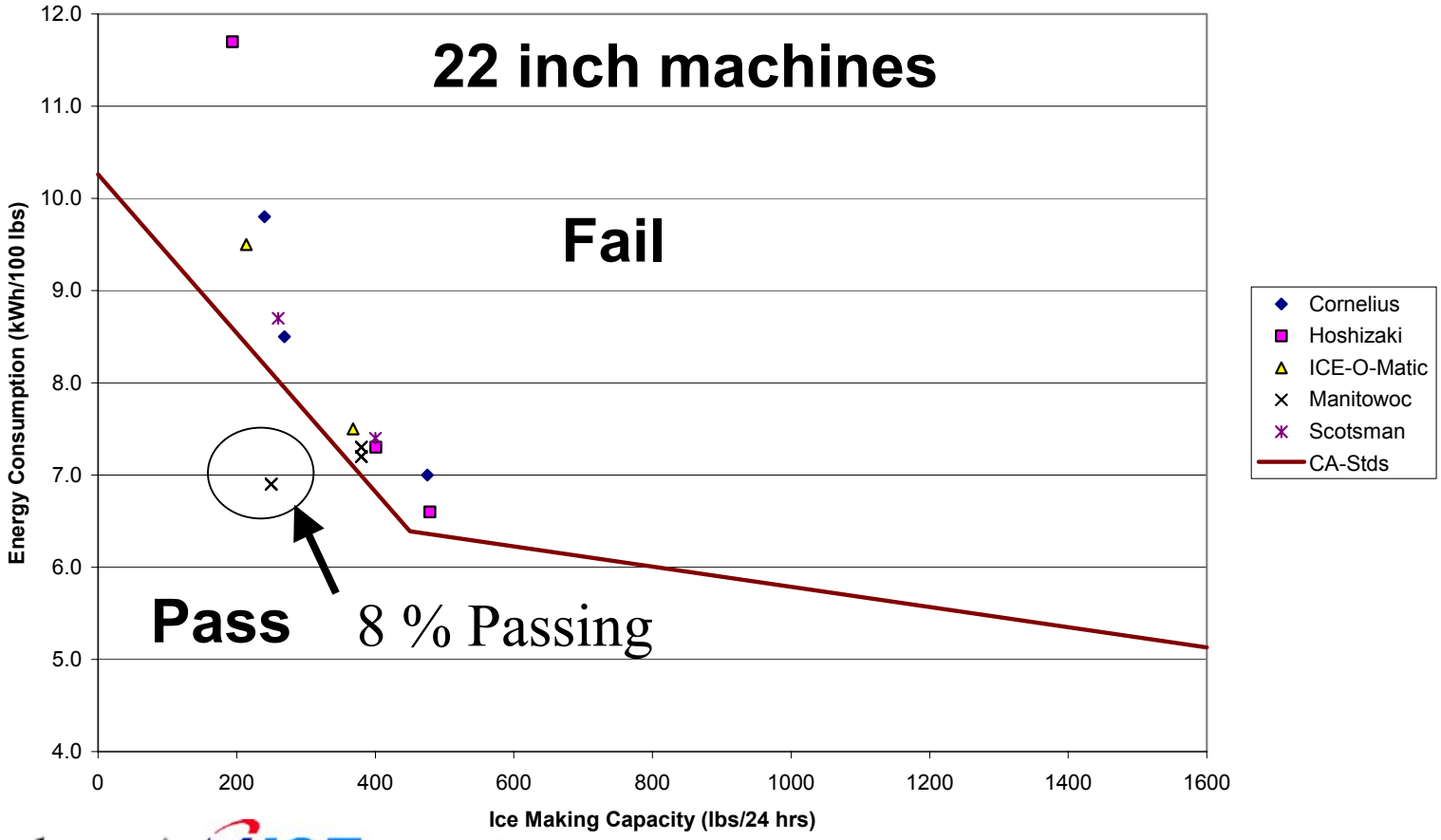
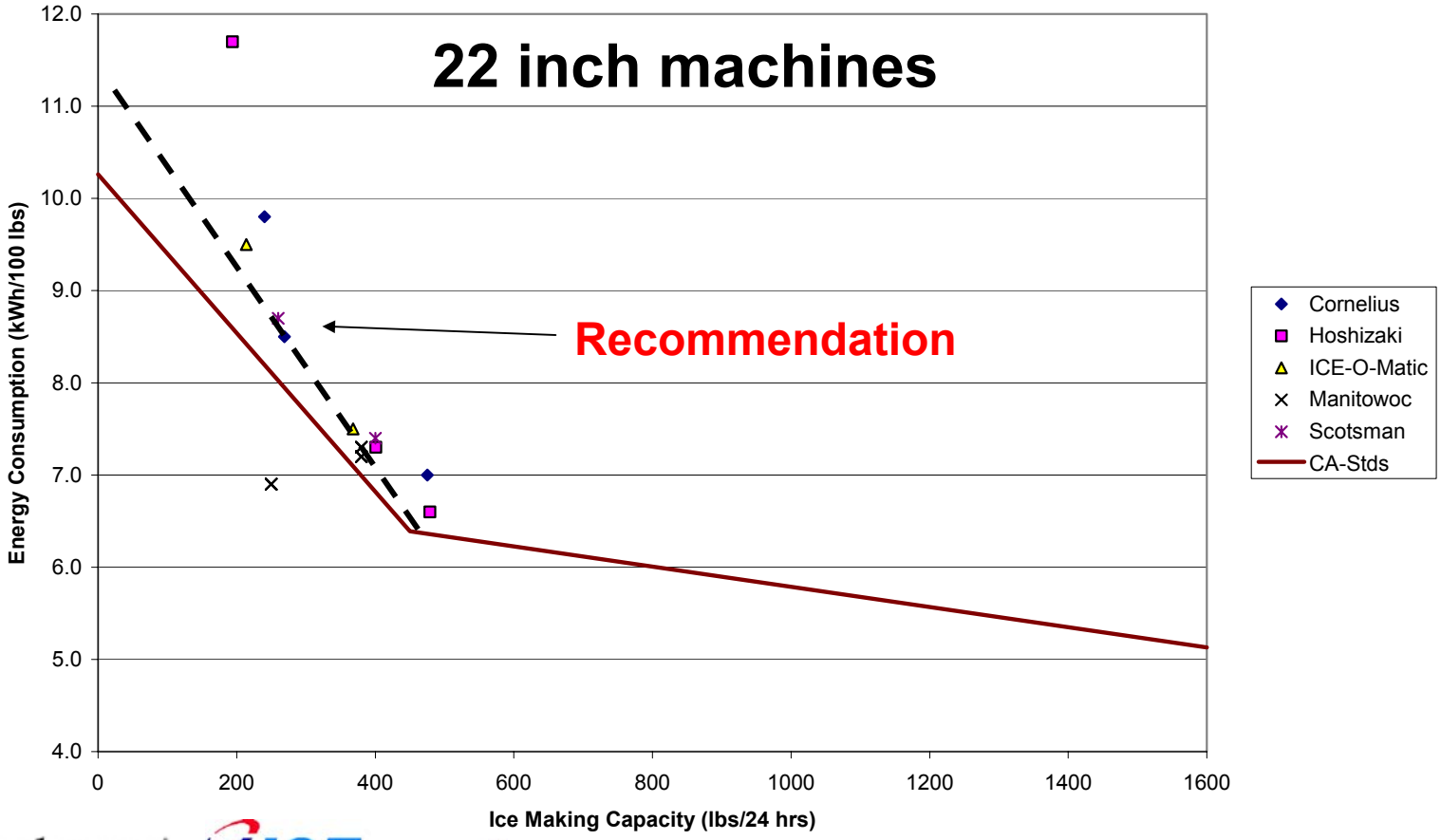
Category: Air Cooled Machines Sub category: 22 inch wide

Problem: 22” wide units are overly restricted



Category: Air Cooled Machines Sub category: 22 inch wide

Recommendation: Provide exemption or differing compliance requirement



Category: Remote Ice Machines

Conventional remote air-cooled ice machines consist of two components:

- Ice making head with compressor included (indoors)
- Condensing unit (outdoors)

Benefits:

- Heat is exhausted outside
- Fan noise is outside

Ice making head

(shown on a beverage dispenser)

Condensing Unit

(located outdoors)

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Category: Remote Ice Machines Sub category: Quiet Machines

Quiet Machine

- Condensing unit AND compressor are **both outdoors**
- Benefits

  Virtually all noise (fan and compressor) is moved outside

  Heat is exhausted outside (lower HVAC costs)

  Ice making head is more compact, facilitating cleaning of dispensers

  Ice making head is 115 volt and can be plugged into the wall

Ice making head

Compressor and Condensing Unit

McDonald's and Taco Bell require this configuration

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Subcategory: “Quiet” Ice Machines

Situation Analysis:

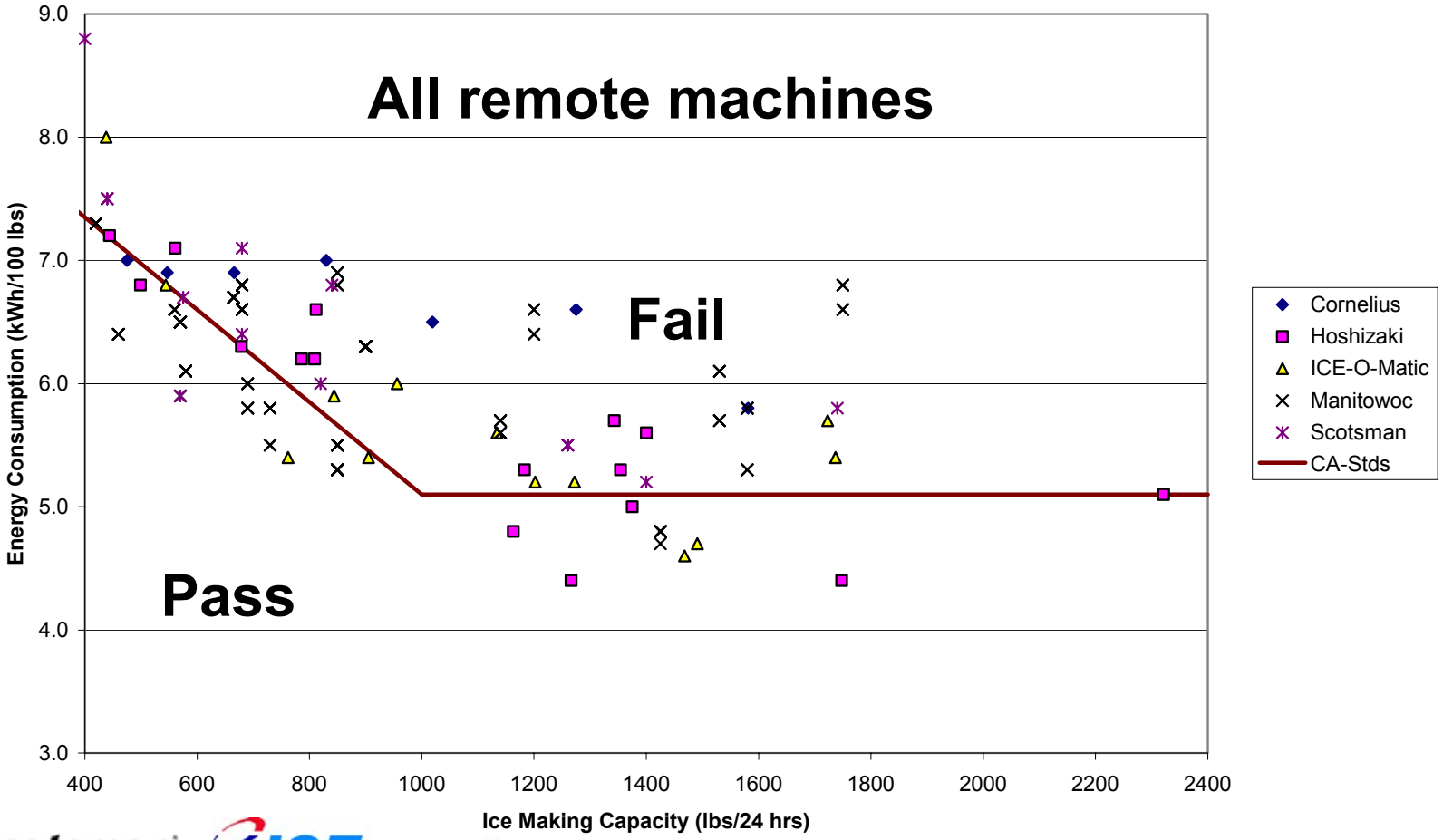
- They fill a need in the marketplace.
- Quiet units are inherently less efficient due to the separation of the compressor from the evaporator.
- Proposed regulations eliminate all quiet-type models with production over 850 lbs/day, eliminating 9 model families and creating an adverse impact to the consumer.

Recommendation:

- Exemption or
- Provide differing compliance requirements

Category: Remote Ice Machines

The proposed regulation does not differentiate "Quiet" remote air-cooled machines.



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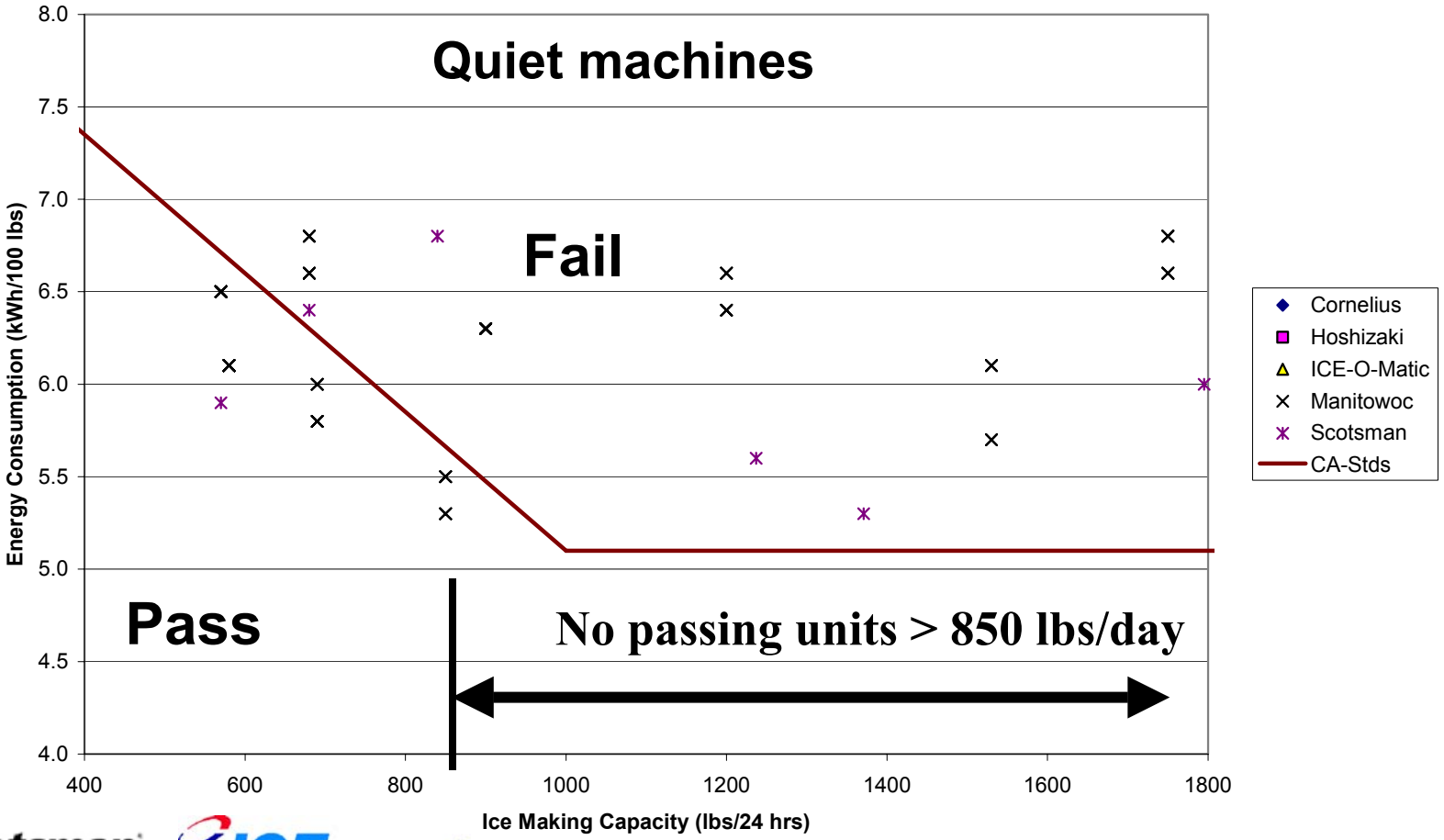
Category: Remote Ice Machines Sub category: Quiet Machines

No Quiet machine over 850 lbs/day passes the regulation



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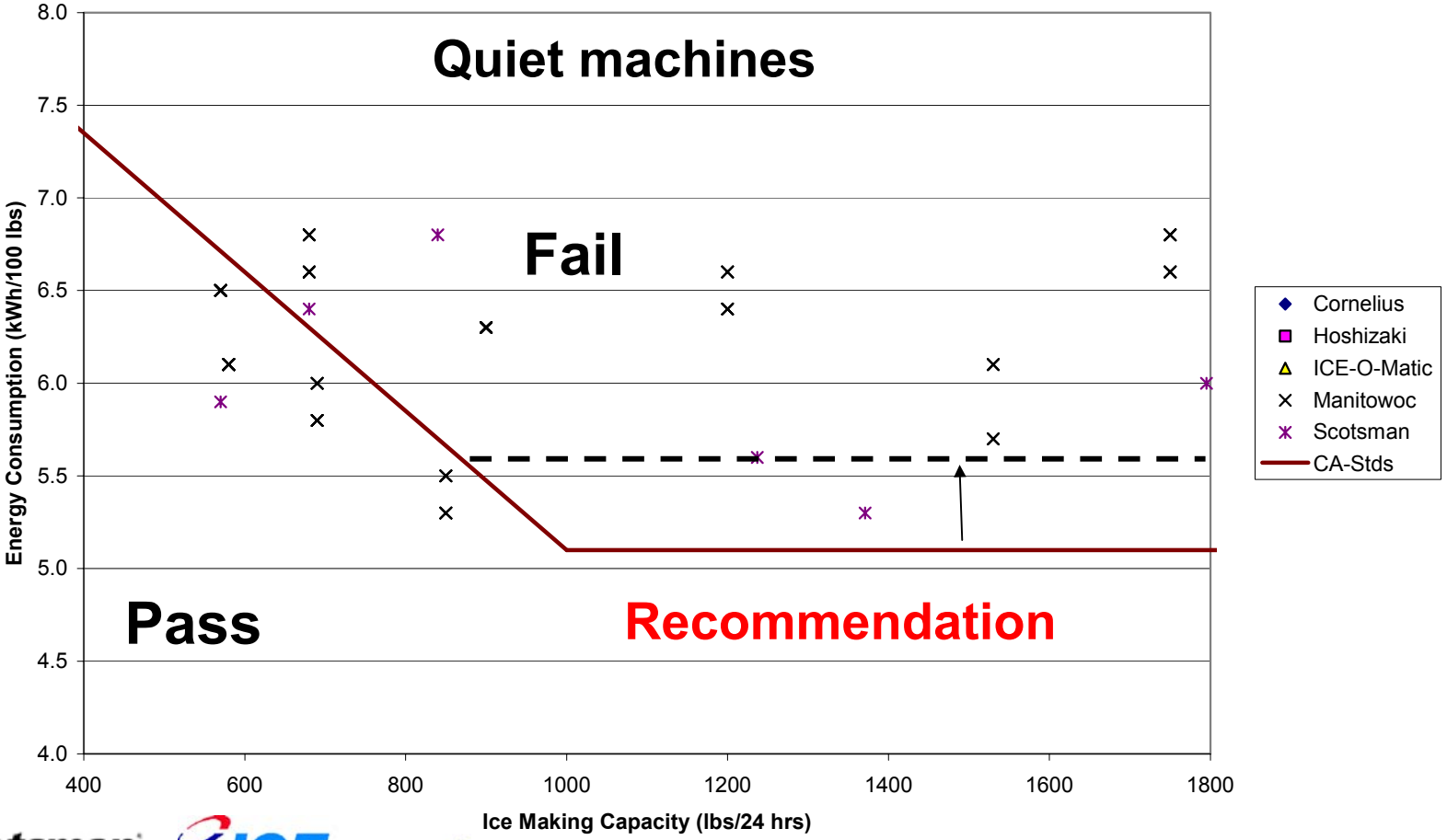
Category: Remote Ice Machines Sub category: Quiet Machines

Recommendation: Exemption or differing compliance requirement



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Category: Water-Cooled Machines

Situation Analysis

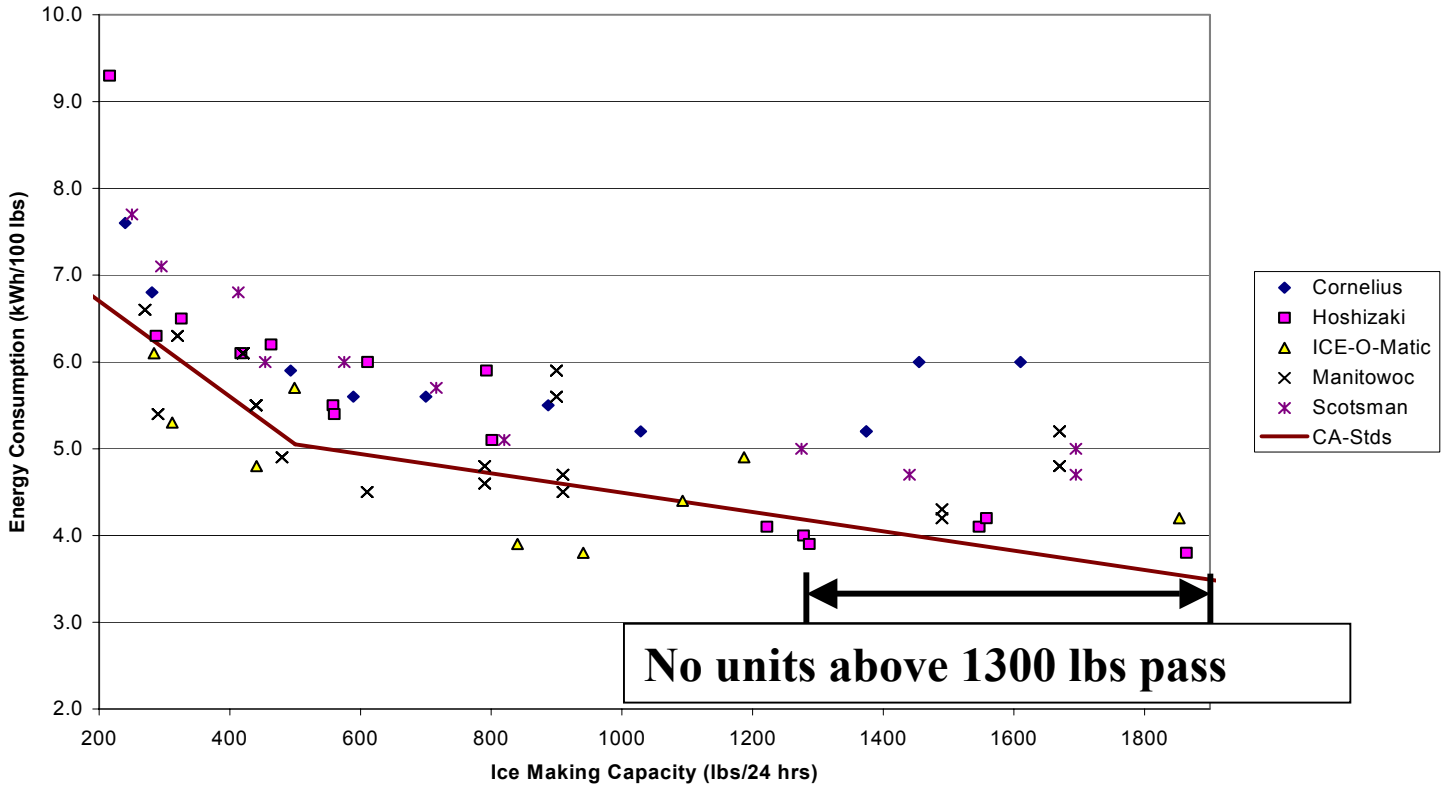
- Water-cooled ice machines use water to dissipate heat.
- They are quiet and require the least amount of maintenance.
- They are the most energy-efficient type of ice machine
- Proposed regulation would create adverse impact by forcing a switch from water cooled to less efficient air cooled models above 1300 lbs

Recommendation

Modify the energy consumption regulation for water-cooled units

Category: Water-Cooled Machines

Proposed regulation creates an adverse impact by precluding water-cooled units above 1300 lbs/day which are the most efficient units on the market



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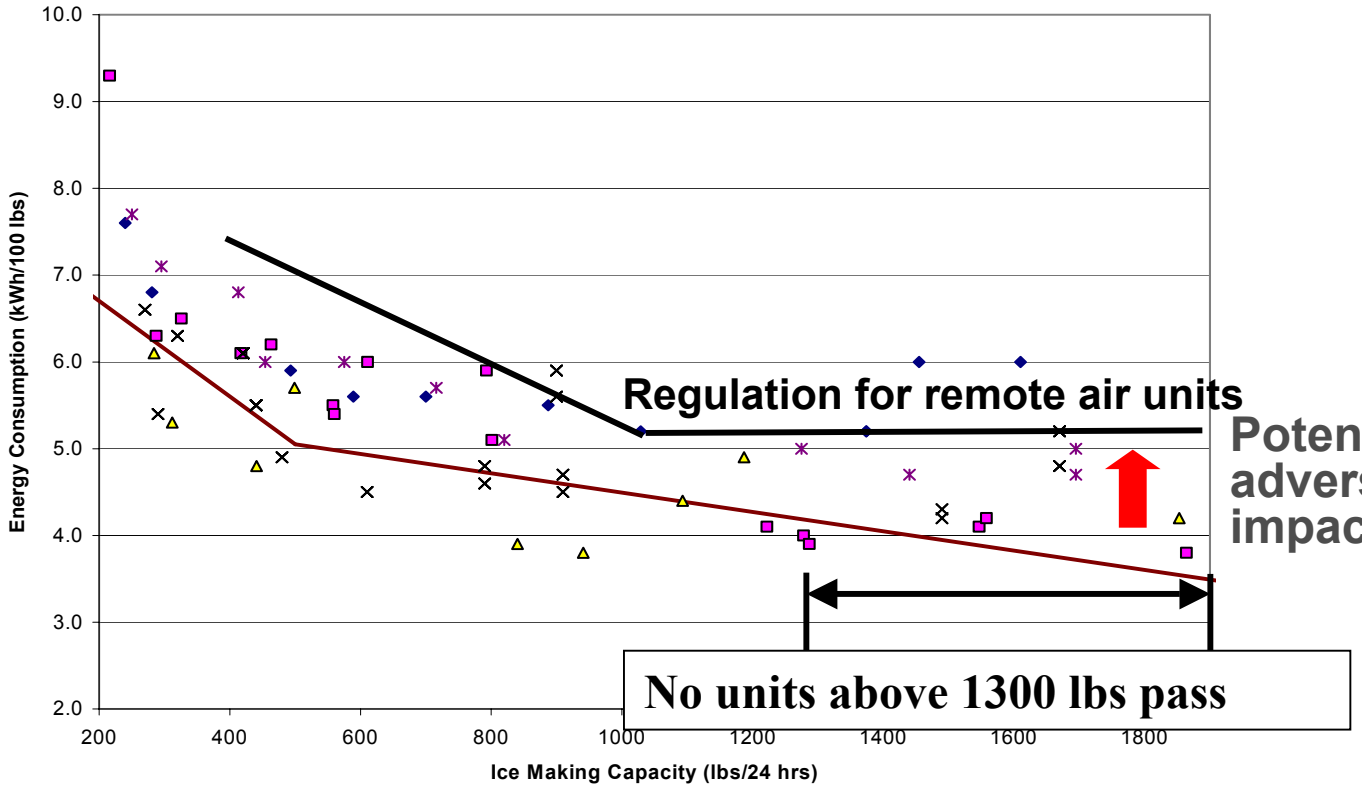
Category: Water-Cooled Machines

The proposed regulation creates an adverse energy impact by shifting the market toward remote air cooled machines above 1300 lbs/day *(increases energy consumption by 1.25 kWh/100 lbs)*



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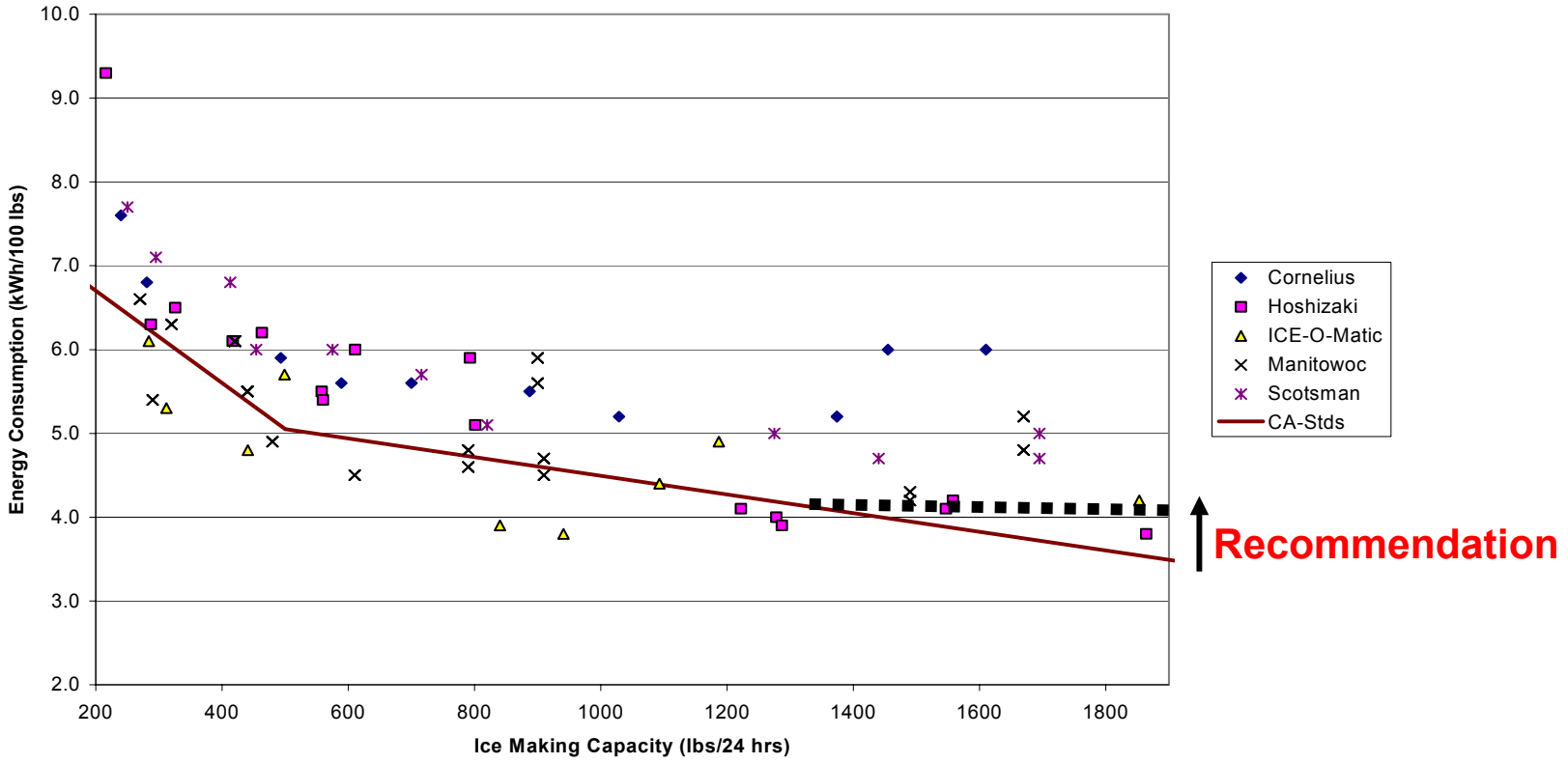
Category: Water-Cooled Machines

Recommendation: Exemption or differing compliance requirement



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Contents

Implementation Refinement: Minor Corrections and Clarifications

Definition of "commercial ice maker"

- The regulation does not provide a clear definition of "commercial ice maker"

  Does it include flakers?

  - **Flakers are more energy and water efficient but not currently rated by ARI**
  - **Should California provide incentives to switch to flakers?**

  Does it include residential ice machines? Industrial ice machines?

Recommendation

- The regulation should indicate that it applies to **commercial cube ice machines** with capacities between 50 and 2500 lbs per 24 hours when measured at standard ARI rating conditions
- Consider strategy to leverage benefit from more efficient flakers

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Implementation Refinement: Minor Corrections and Clarifications

Definition of "H"

- As defined in the regulation, "H = harvest rate in *hundreds* of pounds per 24 hours"
- This definition results in all units passing the regulation
- **Recommendation:** H = harvest rate in pounds per 24 hours

Definition of Water Use

- The regulation does not define what this means
- Does it mean potable water use? Condenser water use? Both?
- **Recommendation:** Water Use refers to condenser water only.

Implementation Refinement – Adverse Impact

Under the proposed regulation it is possible to convert a failing machine into a passing one by simply reducing its stated capacity.

- A manufacturer can under-state the capacity of an ice machine by any amount without violating the ARI regulation.

Example – Adverse Impact

- **ICE-O-Matic model ICE0520HA**

Rated Capacity =	368 lbs/day
Rated energy =	7.5 kWh/100 lbs
regulation Max energy =	7.1 kWh/100 lbs
Result =	FAIL

- **De-rating this unit as allowed by ARI :**

Rated Capacity =	320 lbs/day
Rated energy =	7.5 kWh/100 lbs
regulation Max energy =	7.5 kWh/100 lbs
Result =	PASS

- ***By understating the capacity, this machine now complies with the regulation***

Recommendation

- **The ARI test parameters must be changed to stipulate that the tested capacity must be within plus or minus 5% of the stated capacity.**
  - **Eliminates potential of shifting market to less efficient machines**

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Contents

Summary

We recommend the following considerations:

MINOR CORRECTIONS AND CLARIFICATIONS

Correctly define "H"

Clarify definition of "water use"

Clarify definition of "commercial ice maker".

REDUCE ADVERSE IMPACT

- **Provide a differing compliance requirement or exemption for:**
  - **22 inch wide units**
  - **"Quiet" units**
  - **Water-cooled units**
- **Stipulate that the tested capacity must be within plus or minus 5% of the stated capacity**

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END